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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,647	12/17/2001	Donald Goldfarb	AP33840	1814
21003 7590 07/25/2007 BAKER BOTTS L.L.P. 30 ROCKEFELLER PLAZA 44TH FLOOR NEW YORK, NY 10112-4498				
			EXAMINER MEINECKE DIAZ, SUSANNA M	
			ART UNIT 3694	PAPER NUMBER
			MAIL DATE 07/25/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/022,647	Applicant(s) GOLDFARB ET AL.	
	Examiner Susanna M. Diaz	Art Unit 3694	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 May 2007.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) 10-12, 19-21 and 31-36 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13-18, 22-30, 37 and 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/15/02</u> | 6) <input type="checkbox"/> Other: _____  |

### DETAILED ACTION

1. This non-final Office action is responsive to Applicant's election filed May 4, 2007. Applicant's election of Species I in the reply filed on May 4, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement (the Applicant argues that there is no burden, but does not explain why), the election has been treated as an election without traverse (MPEP § 818.03(a)). The restriction requirement is made FINAL.

Non-elected claims 10-12, 19-21, and 31-36 stand as withdrawn.

Claims 1-9, 13-18, 22-30, 37, and 38 are presented for examination.

### *Claim Rejections - 35 USC § 101*

2. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 1-9, 13-18, 22-30, 37, and 38 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Under the statutory requirement of 35 U.S.C. § 101, a claimed invention must produce a useful, concrete, and tangible result. For a claim to be useful, it must yield a result that is specific, substantial, and credible (MPEP § 2107). A concrete result is one that is substantially repeatable, i.e., it produces substantially the same result over and over again (*In re Swartz*, 232 F.3d 862, 864, 56 USPQ2d 1703, 1704 (Fed. Cir. 2000)). In order to be tangible, a claimed invention must set forth a practical application that generates a real-world result, i.e., the claim must be more than a mere abstraction

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(*Benson*, 409 U.S. at 71-72, 175 USPQ at 676-77). Additionally, a claim may not preempt abstract ideas, laws of nature or natural phenomena nor may a claim preempt every "substantial practical application" of an abstract idea, law of nature or natural phenomena because it would in practical effect be a patent on the judicial exceptions themselves (*Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972)). (Please refer to the "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" for further explanation of the statutory requirement of 35 U.S.C. § 101.)

Claims 1-9, 13-18, 22-30, 37, and 38 are directed toward a mathematical algorithm *per se*. There is no practical application of the algorithm, thereby rendering the claimed invention an abstract idea *per se* (which is non-statutory under § 101). Consequently, the claims fail to produce a result that is useful, concrete, and tangible.

Additionally, the values, vectors, matrices, and thresholds are so broadly defined that it is not clear how they specifically relate to determining an investment portfolio. The claims are so broadly and abstractly written that they attempt to preempt every "substantial practical application" of an abstract idea, law of nature or natural phenomena because it would in practical effect be a patent on the judicial exceptions themselves, which is prohibited under § 101.

Further regarding claims 22-30, 37, and 38, it is not clear that the instructions defining a computer program are statically embodied in the computer readable media itself; therefore, these claims could potentially be interpreted as being directed toward a computer program *per se* (which is also non-statutory subject matter under § 101).

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Please clarify within the claims themselves that the instructions are embodied within the media.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-9, 13-18, 22-30, 37, and 38 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preamble of claims 1, 13, and 22 recites that the claimed invention is for determining an investment portfolio; however, this result is never achieved in the body of the claim, thereby raising questions regarding the intended claim scope.

Additionally, the values, vectors, matrices, and thresholds are so broadly defined that it is not clear how they relate to determining an investment portfolio or how they would be adapted to varying desired investment objectives.

Which specific investment parameters are part of Applicant's novel approach to determining investment portfolios? What is the significance of the confidence threshold selected for the investment parameters? Without knowing what the specific investment parameters are, the significance of the confidence threshold is unclear.

The claims also recite the determination of "a nominal value for the mean return for each asset," "a nominal factor loading vector for each asset," and "a nominal factor

covariance matrix." What are the metes and bounds of the term "nominal." Does "nominal" refer to an insignificant value or a minimum value? Also, what does the "loading vector for each asset" represent? Regarding the covariance matrix, which investment parameters are being evaluated in terms of covariance?

Independent claims 1, 13, and 22 recite the functionality of, based upon a desired investment objective, applying at least one of said uncertainty sets to an investment problem of interest such that the worst case market parameters reside within the applied uncertainty sets with a probability set by the selected confidence threshold. There are three recited uncertainty sets, the first associated with the mean return vector based upon the nominal returns for each asset and the confidence threshold, the second associated with the factor loading matrix based upon the nominal factor loading vectors and the confidence threshold, and the third associated with the factor covariance matrix based on the nominal factor covariance matrix and the confidence threshold. If only one of these three recited uncertainty sets is ultimately used, what is the purpose of defining the other sets and determining any values, factors, or thresholds needed to define the respective uncertainty set. For example, if the first uncertainty set is used, then the second and third uncertainty sets can effectively be ignored in the sense that they do not affect the manipulative functionality of the invention, thereby raising the question of whether or not the determination of a nominal factor loading vector for each asset and a nominal factor covariance matrix is within the scope of the invention. Similarly, if the second uncertainty set is used, then the first and third uncertainty sets can effectively be ignored in the sense that they do not affect the

manipulative functionality of the invention, thereby raising the question of whether or not the determination of a nominal value for the mean return of each asset and a nominal factor covariance matrix is within the scope of the invention. Finally, if the third uncertainty set is used, then the first and second uncertainty sets can effectively be ignored in the sense that they do not affect the manipulative functionality of the invention, thereby raising the question of whether or not the determination of a nominal value for the mean return of each asset and a nominal factor loading vector for each asset is within the scope of the invention.

As per claims 22-30, 37, and 38, it is not clear that the instructions defining a computer program are statically embodied in the computer readable media itself; therefore, these claims could potentially be interpreted as being directed toward a computer program *per se* (which is also non-statutory subject matter under § 101). Please clarify within the claims themselves that the instructions are embodied within the media.

Dependent claims 2-9, 14-18, 23-30, 37, and 38 do not remedy the aforementioned issues and are therefore rejected for the same reasons.

Appropriate correction is required.

*In light of the rejections of claims 1-9, 13-18, 22-30, 37, and 38 under § 112, 2<sup>nd</sup> paragraph, the following art rejections reflect the Examiner's best understanding of the claimed invention.*

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7. Claims 1-9, 13-18, 22-30, 37, and 38 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Lobo et al. ("The Worst-Case Risk of a Portfolio").

8. Claims 1-9, 13-18, 22-30, 37, and 38 are rejected under 35 U.S.C. 102(a) as being clearly anticipated by Lobo ("Robust and Convex Optimization With Applications in Finance").

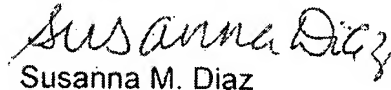
***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susanna M. Diaz whose telephone number is (571) 272-6733. The examiner can normally be reached on Monday-Friday, 8 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Trammell can be reached on (571) 272-6712. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Susanna M. Diaz  
Primary Examiner  
Art Unit 3694

July 23, 2007